

SHORT REPORT

Hand-washing patterns and infection control in the accident and emergency department

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INTRODUCTION

Hand-washing as a means of preventing nosocomial infection was first recognized and applied by Semmelweiss last century. More recently the transmission of organisms by the hands of doctors, nurses and other personnel has been well recognized in causing infection (Steers & Mallison, 1975). It is generally considered that hand-washing is the single most important procedure in the prevention of these infections and several bodies have recommended that hand-washing should be performed by personnel involved with patients before and after patient contact (AHA, 1974). These recommendations should particularly apply in the accident and emergency department where both infected and non-infected wounds, skin infections and other transmissible diseases such as hepatitis are frequently seen. In view of this we have mounted a study in our accident and emergency department to assess the frequency of hand-washing and its possible role in infection.

METHODS

Without prior knowledge or consent of the medical or nursing staff, the investigators recorded hand-washing patterns in the various areas of the accident and emergency department over a two-month period. Observations of the incidence of patient contact and prior hand washing were made. The 14 doctors routinely working in the department were studied together with the 27 permanent nurses within the department. Note was taken of the site of treatment of the patient within the department (either the 'trolley room' where the more seriously ill or injured patients are examined and treated, or the 'examination room' where the minor illnesses and injuries are treated).

RESULTS

A total of 334 patient/doctor interactions were observed. In only 43 (12·8%) of these contacts did hand-washing occur prior to the doctor having seen the patient. In the examination room 252 patient/doctor contacts occurred and 26 hand-washing episodes occurred following contact (10·3%), while in the trolley room area 82 patient/doctor contacts occurred and in 17 of these hand-washing had occurred prior to contact (20·7%).

A total of 276 nurse/patient interactions were observed and in 180 of these, nurses were observed to wash their hands following contact (65·2%). One hundred and fifty four of these contacts occurred in the trolley room and were preceded by 97 (62·9%) episodes of hand-washing; 122 nurse/patient contacts occurred in the examination room with 83 prior hand-washing episodes (68·0%).

DISCUSSION

In general the doctors washed their hands only once after every 10 patient contacts, which contrasts markedly with the 6 out of 10 patient contacts performed by the nursing staff. In the examination room there are a total of 9 sinks with hot and cold running water while in the trolley room there is one. Both bar and liquid soap is available together with Iodophor aqueous compounds and Chlorhexidine. Obviously the primary purpose of hand-washing is to remove transient bacterial contamination that has been acquired, either by recent exposure to infected or colonized patients or environmental sources (Steers & Mallison). Simple soap is effective in removing such transient flora while the use of Iodophor, alcohol and Chlorhexidine preparations have also been found effective in reducing resident and transient flora. Indeed some reports have suggested that friction and water alone are almost as effective as soap and water (Lowbury *et al.*, 1964).

Gram positive cocci still cause nearly 20% of hospital-acquired infections. Hand carriage has been implicated in many infective outbreaks particularly in susceptible individuals such as neonates and immune-suppressed patients. It has been reported that on average 40 000 colony forming units can be recovered from most persons' hands, while 44% of personnel randomly sampled, carried Gram negative bacilli and 11% staphylococcus aureus (Maki, 1978). There is little evidence to suggest spread of these organisms by fomites or airborne transmission of staphylococci, and these routes are probably of little importance unless a carrier with heavy colonization is present. It must be emphasized to all staff working in accident and emergency departments that hand-washing between patient contacts is necessary, both to prevent the transmission of nosocomial infections between patients and to reduce the risk of carriage and infection of personnel themselves.

We are now conducting a study to establish what pathogenic organisms can be grown from the hands of doctors and nurses in the accident and emergency department both before and after examination. We will attempt to establish the effects of hand-washing on these organisms and so be able to gauge the risk of cross infection.

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